Cromemco®

256Kz/1024Kz
Memory Board

Instruction Manual

Cromemco

256Kz/1024Kz Memory Board

Instruction Manual

This manual was produced using a Cromemco System Three computer running under the Cromemco Cromix Operating System. The text was edited with the Cromemco Cromix Screen Editor. The edited text was proofread by the Cromemco SpellMaster Program and formatted by the Cromemco Word Processing System Formatter II. Camera-ready copy was printed on a Cromemco 3355B printer.

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Chapter 1

THE 256KZ AND 1024KZ IN A 68000 SYSTEM

INTRODUCTION

The Cromemco 1024KZ and 256KZ memory boards provide S-100 bus systems with 1 megabyte and 256 kilobytes, respectively, of high-speed random access memory (RAM).

Both the 1024KZ and the 256KZ are 16-bit memory boards, and both are compatible with Cromemco's 68000-based central processors, the DPU and the XPU. Unlike the 1024KZ, the 256KZ is also compatible with Cromemco's Z80-based central processor, the ZPU. The 256KZ can be configured either as four 64-Kbyte banks of memory in a Z80 system (refer to chapter 2), or as 256 Kbytes of contiguous memory in a 68000 system.

Table 1-1 lists the operational specifications of the 1024KZ and the 256KZ.

Table 1-1: 256KZ/1024KZ SPECIFICATIONS

Memory Capacity:	256KZ - 256 Kbytes, 16 bits/word
	1024KZ - 1 megabyte, 16 bits/word
Compatible CPU boards:	256KZ - DPU, XPU, and ZPU
	1024KZ - DPU and XPU
Memory Type:	256KZ - 64K RAM
	1024KZ - 256K RAM
	150 nanosecond access time
Bus:	S-100/IEEE-696
Power Requirements:	+8 volts @ 1.5 amps
Operating Environment:	0 to 55 degrees C

Table 1-2: 256KZ AND 1024KZ SWITCH SETTINGS

Lower Memory Boundary		256KZ Switch	1024KZ Switch
hex (0000)	decimal (K)	1 2 3 4 5 6 7	1 2 3 4
00	0	1 1 1 1 1 1 1	1 1 1 1
04	256	0 1 1 1 1 1 0	
08	512	0 1 1 1 1 0 1	
0C	768	0 1 1 1 1 0 0	
10	1024	0 1 1 1 0 1 1	1 1 1 0
.	.	.	.
.	.	.	.
.	.	.	.
F0	15360	0 0 0 0 0 1 1	* 0 0 0 0
F4	15616	0 0 0 0 0 1 0	
F8	15872	0 0 0 0 0 0 1	
FC	16128	* 0 0 0 0 0 0 0	

*reserved for memory mapped I/O

SETUP AND INSTALLATION

Refer to your system manual for instructions on adding new circuit boards. Before installing the 256KZ and 1024KZ boards, their switches must be set so that each board is assigned a unique place in the 68000 processor's 16 megabyte address space. There are no cables or jumper settings required.

Switch Settings

256KZ - Switch settings for 256KZ boards in a 68000 system are shown in figure 1-1. Note that switch 1 on the 256KZ board, which enables the bottom 32 Kbytes of memory on power-up or reset, is ON only for the first 256KZ.

1024KZ - Switch settings for 1024KZ boards are shown in figure 1-2.

If you have a combination of 256KZ and 1024KZ boards, refer to table 1-2 for the appropriate switch settings (1 = ON, 0 = OFF).
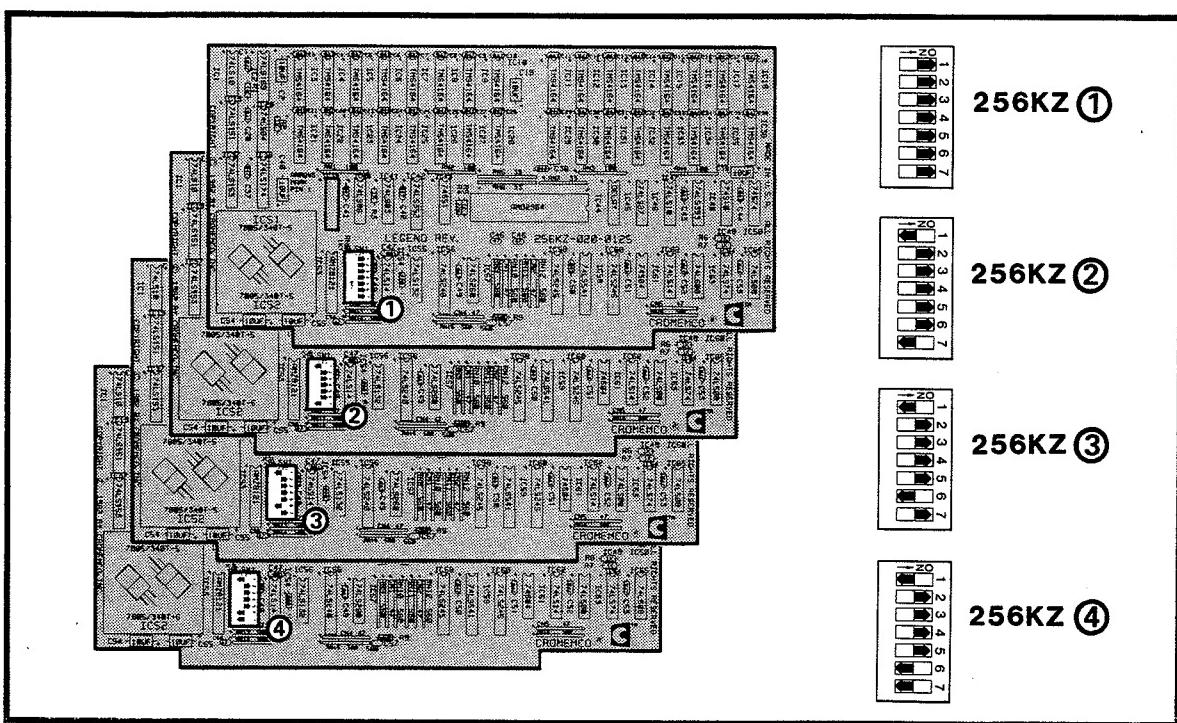
Figure 1-1: 256KZ SWITCH SETTINGS
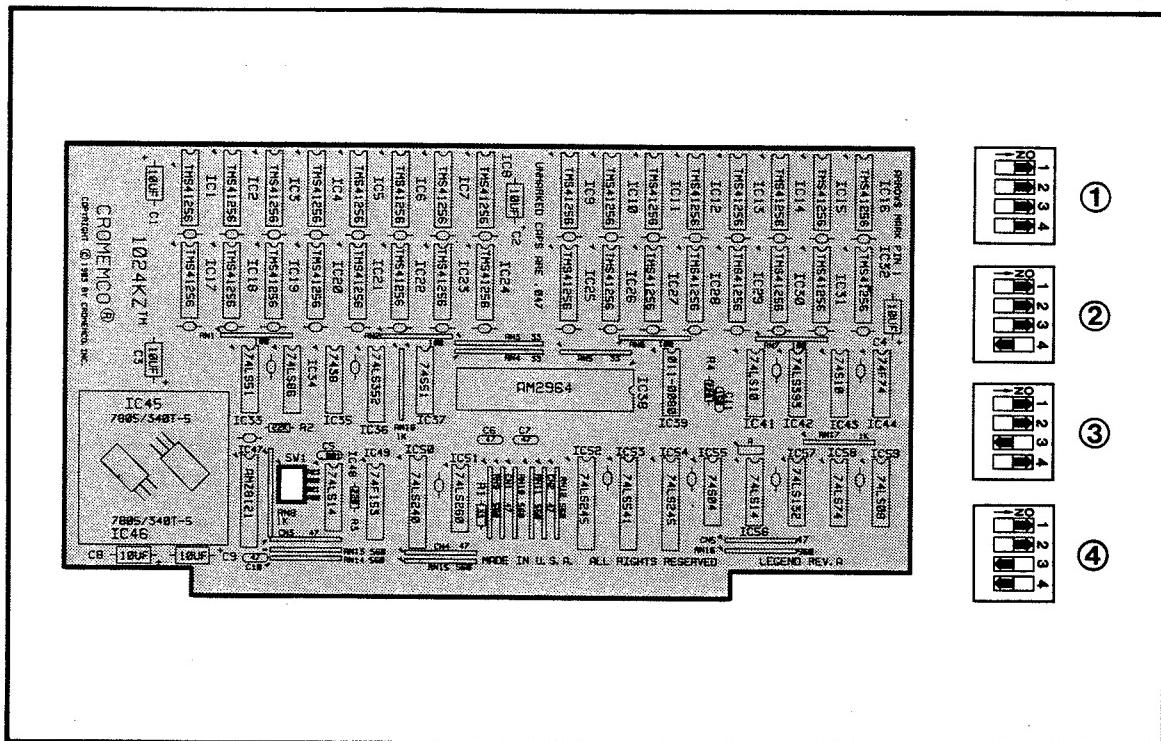
Figure 1-2: 1024KZ SWITCH SETTINGS

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Chapter 2

THE 256KZ IN A Z80 SYSTEM

In a Z80 Cromix system, the 256KZ is the logical equivalent of four 64-Kbyte boards. The bank-select PROM in IC39 determines the bank number assigned to each 64-Kbyte segment.

With a DPU (or XPU) central processor board, you can run the Z80 and 68000 Cromix (or Cromix-Plus) Operating Systems interchangeably, without changing the switch settings on the 256KZ. The 256KZ automatically switches from contiguous memory in a 68000 system to bank selected memory in a Z80 system. During Z80 operations data is transferred in bytes (8 bits), and during 68000 operations data is transferred in words (16 bits).

SETUP AND INSTALLATION

Refer to your system manual for instructions on adding new circuit boards. Before installing the 256KZ in a Z80 system, switch 1 must be set correctly (switches 2 through 7 are irrelevant to Z80 operations), and IC39 must have the correct bank-select PROM for your system configuration.

3-User Systems

A 3-user Z80 Cromix system requires only one 256KZ board. As shipped, the 256KZ has a 3-user PROM (part number 502-0047) already installed in IC39 that fills banks 0 through 3 with memory, and maps banks 4 through 6 to bank zero. Switch 1, which enables the bottom 32 Kbytes of memory on power-up or reset, must be ON (see figure 2-1).

6-User Systems

A 6-user Z80 Cromix system requires two 256KZ boards. Remove the factory-installed PROM in IC39 from both boards. On the first board, install a 6-user PROM for banks 0 through 3 (part number 502-0048) in IC39, and set switch 1 to the ON position (see figure 2-1). On the second board, install a 6-user PROM for banks 4 through 6 (part number 502-0049) in IC39, and set switch 1 to the OFF position.
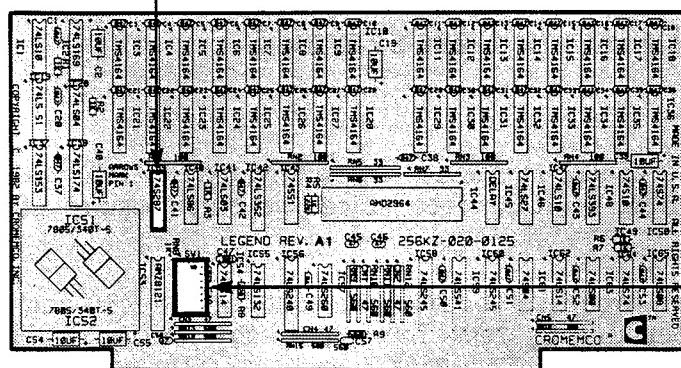
Figure 2-1: THE 256KZ IN Z80 CROMIX SYSTEMS

256KZ and 64KZ-II

For a 4-user Z80 Cromix system composed of one 256KZ and one 64KZ-II, install a 4-user PROM in IC39 (part number 502-0050). For a 5-user system with one 256KZ and two 64KZ-II boards, install a 5-user PROM in IC39 (part number 502-0051). In both cases, set switch 1 on the 256KZ board to the ON position.

Appendix A

256KZ PARTS LIST

**Integrated
Circuits**

Designation	Cromemco Description	Part No.
IC1	74LS10	010-0063
IC2	74LS169	010-0144
IC3-18	TMS4164-15	011-0079
IC19	74LS151	010-0049
IC20	74LS04	010-0066
IC21-36	TMS4164-15	011-0079
IC37	74LS153	010-0048
IC38	74LS174	010-0097
IC39	PROM 3-user	502-0047
	Socket 16-pin	017-0002
IC40	74LS86	010-0052
IC41	7438	010-0192
IC42	74LS352	010-0343
IC43	74S51	010-0171
IC44	AMD2964	010-0329
IC45	Delay line	011-0080
IC46	74LS27	010-0112
IC47	74LS10	010-0063
IC48	74LS393	010-0141
IC49	74S10	010-0035
IC50	74S74	010-0142
IC51,52	7805/340T-5	012-0001
	Sil-pad	021-0109
IC53	AMZ8121	010-0328
IC54	74LS14	010-0061
IC55	74LS132	010-0258
IC56	74LS240	010-0038
IC57	74LS260	010-0301
IC58	74LS245	010-0120
IC59	74LS541	010-0344
IC60	74LS245	010-0120
IC61	74S04	010-0123
IC62	74LS14	010-0061
IC63	74S00	010-0036
IC64	74LS74	010-0055
IC65	74LS08	010-0064

Capacitors

Designation	Cromemco Description	Part No.
C1	.047 uf mono 50V	004-0061
C2	10 uf tant 20V	004-0032
C3-18	.047 uf mono 50V	004-0061
C19	10 uf tant 20V	004-0032
C20-38	.047 uf mono 50V	004-0061
C39,40	10 uf tant 20V	004-0032
C41-44	.047 uf mono 50V	004-0061
C45,46	47 pf mono	004-0000
C47	.001 uf mono	004-0043
C48-53	.047 uf mono 50V	004-0061
C54,55	10 uf tant 20V	004-0032
C56,57	47 pf mono	004-0000
C58	100 pf mica 50V	004-0055

Capacitor Networks

Designation	Cromemco Description	Part No.
CN1-5	47 pf 8-pin	005-0000

Resistors

Designation	Cromemco Description	Part No.
R1-3	1 Kohm 1/4 watt 1%	001-0086
R4	22 Kohm 1/4 watt	001-0049
R5-7	1 Kohm 1/4 watt 1%	001-0086
R8	220 ohm 1/4 watt	001-0010
R9,10	560 ohm 1/4 watt	001-0015
R11,12	1.5 Kohm 1/4 watt	001-0020

Resistor
Networks

Designation	Cromemco Description	Part No.
RN1-4	100 ohm 4R 8-pin	003-0001
RN5,6	33 ohm 5R 10-pin	003-0051
RN7	33 ohm 4R 8-pin	003-0000
RN8	1 Kohm 7R 8-pin	003-0007
RN9-16	560 ohm 4R 8-pin	003-0006

Miscellaneous

Designation	Cromemco Description	Part No.
SW1	Switch 7-position	013-0033
	256KZ PC board	020-0125
	Heatsink	021-0017
	Rivet .125x.382	015-0188

Appendix B

1024KZ PARTS LIST

**Integrated
Circuits**

Designation	Cromemco Description	Part No.
IC1-32	TMS41256	011-0112
IC33	74LS51	010-0106
IC34	74LS86	010-0052
IC35	7438	010-0192
IC36	74LS352	010-0343
IC37	74S51	010-0171
IC38	AM2964	010-0329
	Socket 40-pin	017-0006
IC39	Delay line	011-0080
IC41	74LS10	010-0063
IC42	74LS393	010-0141
IC43	74S10	010-0035
IC44	74F74	010-0337
IC45,46	7805/340T-5	012-0001
IC47	AMZ8121	010-0328
IC48	74LS14	010-0061
IC49	74F153	010-0366
IC50	74LS240	010-0038
IC51	74LS260	010-0301
IC52	74LS245	010-0120
IC53	74LS541	010-0344
IC54	74LS245	010-0120
IC55	74S04	010-0123
IC56	74LS14	010-0061
IC57	74LS132	010-0258
IC58	74LS74	010-0055
IC59	74LS08	010-0064

Capacitors

Designation	Cromemco Description	Part No.
C1-4	10 uf tant	004-0032
C5	.001 uf crdc	004-0141
C6,7	47 pf crdc	004-0152
C8,9	10 uf tant	004-0032
C10	47 pf crdc	004-0152
C11	150 pf mono	004-0010

Capacitor Networks

Designation	Cromemco Description	Part No.
CN1-5	47 pf 4C 8-pin	005-0000
-o-	.047 uf 50V	004-0061

Resistors

Designation	Cromemco Description	Part No.
R1	33 ohm 1/4 watt	001-0071
R2	22 Kohm 1/4 watt	001-0049
R3,4	220 ohm 1/4 watt	001-0010

Resistor Networks

Designation	Cromemco Description	Part No.
RN1,2	100 ohm 4R 8-pin	003-0001
RN3,4	33 ohm 5R 10-pin	003-0051
RN5	33 ohm 4R 8-pin	003-0000
RN6,7	100 ohm 4R 8-pin	003-0001
RN8	1 Kohm 9R 10-pin	003-0011
RN9-16	560 ohm 4R 8-pin	003-0006
RN17,18	1 Kohm 7R 8-pin	003-0007

Miscellaneous

Designation	Cromemco Description	Part No.
SW1	Heatsink Rivet .125x.382 1024KZ PC board Sil-pad Switch 4 position	021-0017 015-0188 020-0147 021-0109 013-0001

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2. the return authorization number
3. a description of the problem, and
4. proof of the date of retail purchase

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